WHAT IS CLAIMED IS:

1. A data processing method comprising the steps of:

arranging data in bytes in a matrix direction to form information data block;

constituting an outer parity with respect to 32k bytes unit of the information data block as an error correction code; and

further adding an overall error correcting code including the outer parity in the 62k byte unit of the information data block.

2. A data processing method, ~~wherein~~ comprising the steps of:

digital data is processed in bytes to configure one information data block in (M × N) bytes of M rows × N columns;

data is arranged in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row;

(K × M) rows × N columns matrix block is further constructed which is a set of the information data block, and which is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission

order;

on each column of (K × N) bytes of the matrix block, an error-correcting word PO-b{(K/2) × Q bytes} is created with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in the K information data block order, and an error-correcting word PO-b {(K/2) × Q} bytes is created with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in the K information data blocks;

PO-a and PO-b are scattered and arranged into K information data blocks constituted of (M × N) bytes of N rows and N columns so that

each column of N columns is formed as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an integar of 1 or more)); and

the error-correcting word of P bytes is further added for each row of N bytes;

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q)) × (N + F)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data block of (K × M × N) bytes as information portion.

3. The processing method according to claim 2, wherein when M is an even number, and Q is 1,

the even number rows of the even-number-th information data block and the odd-number rows of the odd-number-th information data block are aggregated to create the PO-a while

the odd number rows of the even-number-th information data block and the even number rows of the odd-number-th information data block are aggregated to create PO-b.

4. The data processing method according to claim 2, wherein when Q is 2 or more, and the M is an even number, the even number rows of the even-number-th information data blocks and the odd-number rows of the odd-number-th information data blocks are aggregated to create the PO-a while

the odd number rows of the even-number-th information data blocks and the even number rows of the odd-number-th information data blocks are aggregated to create PO-b.

5. The data processing method according to claim 2, wherein when Q is 2 or more and M is an even number, the even-number rows of all the information data blocks are aggregated to create the PO-a while the odd-number rows of all the information data blocks are aggregated to create the PO-b.

6. A data processing apparatus, ~~wherein~~ comprising:

digital data is processed in bytes to configure one information data block in (M × N) bytes of M rows and N columns;

data is arranged in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row;

(K × M) rows × N columns matrix block is further constructed which is a set of the information data block, and which is constituted of K information data blocks composed of information data blocks from the 0th information data block to the (K-1)-th information data block which continue in the data transmission order;

on each column of (K × N) bytes of the matrix block, an error-correcting word PO-a{(K/2) × Q bytes} is created with respect to the (k/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in the K information data block order, and an error-correcting word PO-b {(K/2) × Q} bytes is created with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in the K information data blocks;

PO-a and PO-b are scattered and arranged into K information data blocks constituted of (M × N) bytes of

M rows and N columns so that

each column of N columns is formed as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an integar of 1 or more)); and

the error-correcting word of P bytes is further added for each row of N bytes;

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q) × (N + P)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data blocks of (K × M × N) bytes as information portion.

7. A recording medium, wherein an error-correcting product code is recorded with the data processing method according to claim 1 or 2.

8. A data processing apparatus comprising a step of transmitting an error-correcting product code constructed with the data processing method according to claim 1 or 2.

9. A data reproducing method comprising the steps of:

receiving an error-correcting constructed with the 15 data processing method according to claim 1 or 2;

subjecting the block to rearrangement of rows of the blocks; and

forming the rows to a set of rows in which two sets of Reed-Solomon codes PO are created to carry out each set of error correcting process.

10. A data reproducing apparatus comprising:

error-correcting means for carrying out each set of error correcting process by receiving the error correcting product code which is constructed in the data processing method according to claim 1 or 2; and

means for reproducing each row that has been processed with the error processing means at the arrangement position at the time of the error-correcting product code block.